

**REMARKS**

Favorable consideration and allowance are respectfully requested for pending claims 1-14 in view of the following remarks.

***Claim Rejections – 35 U.S.C. § 102 and 35 U.S.C. § 103***

- I -

The rejection of claims 1-14 under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) over U.S. Patent Application Publication No. 2003/0083188 A1 ("Seto '188") is respectfully traversed.

As explained in the present application, in the presently claimed ultraviolet and infrared absorptive greenish glass, if the amount of CeO<sub>2</sub> is less than 0.8 wt%, there may be insufficient ultraviolet absorption, while if the amount of CeO<sub>2</sub> exceeds 2 wt%, the glass may have a yellowish color and raw material cost are increased. (Pages 6-7, Paragraph [0023]). Further, if the amount of TiO<sub>2</sub> is less than 0.8 wt%, there also may be insufficient ultraviolet absorption and the glass may be too blue, while if the amount of TiO<sub>2</sub> exceeds 2 wt%, the glass may have a yellowish color and the visible light transmittance may be too low. (Page 7, Paragraph [0025]). Additionally, if the weight ratio CeO<sub>2</sub>/TiO<sub>2</sub> is less than 0.7, there also may be insufficient ultraviolet absorption, while if the weight ratio CeO<sub>2</sub>/TiO<sub>2</sub> exceeds 1.3, the glass may have a yellowish color. (Pages 11-12, Paragraph [0047]).

- 2 -

Accordingly, independent claim 1 recites in a soda-lime-silica series glass, an ultraviolet and infrared absorptive greenish glass, which is characterized in that, in an expression of weight %, it comprises at least coloring components of

0.3-0.5% of total  $\text{Fe}_2\text{O}_3$ ,

0.8-2.0%  $\text{CeO}_2$ ,

0.8-2.0%  $\text{TiO}_2$ , and

0.10-0.25%  $\text{FeO}$ ,

that  $\text{CeO}_2/\text{TiO}_2$  is 0.7-1.3 in weight ratio expression, and

that the glass at 5mm thickness is

9% or less in ultraviolet transmittance according to ISO/DIS9050,

1% or less in 350nm wavelength transmittance,

70% or greater in 550nm wavelength transmittance, and

25% or less in 1100nm wavelength transmittance.

The features of the presently claimed ultraviolet and infrared absorptive greenish glass are clearly supported, *inter alia*, by Examples 1-1 to 1-5 (pages 14-18, paragraphs [0056]-[0069]) and Examples 2-1 to 2-5 (pages 21-24, paragraphs [0080]-[0091]) of the present application.

Seto '188 discloses two types of glass, that is, low transmittance glass and ultraviolet/infrared absorbent green glass. (Abstract).

Seto '188 discloses neither  $\text{TiO}_2$  and  $\text{CeO}_2$  as essential components in the low transmittance glass nor a weight ratio of  $\text{CeO}_2/\text{TiO}_2$  in the low transmittance glass. (See Page 2, Paragraph [0029]). Moreover, in each of Examples 1-10 and Comparative Examples 1 and 2 of Seto '188, while the low transmittance glass

comprises a small amount of  $\text{TiO}_2$  (*i.e.*, 0.02 or 0.03wt%), the low transmittance glass does not comprise  $\text{CeO}_2$ . (See Pages 3-4, Paragraphs [0051]-[0061]). Furthermore, the low transmittance glass of Seto '188 has a ***low visible light transmittance (YA) of 5 to 65%***. (See Page 2, Paragraph [0030]). More specifically, each of the low transmittance glasses of Examples 1-10 and Comparative Examples 1 and 2 of Seto '188 has a YA value ranging from 16.3 to 49.8% (Examples 2 and Example 6, respectively).

The low transmittance glass of Seto '188 does not anticipate the presently claimed ultraviolet and infrared absorptive ***greenish*** glass as each and every element set forth in the claim is ***not*** found in the low transmittance glass of Seto '188. In particular, the low transmittance glass of Seto '188 does not comprise, *inter alia*, 0.8-2.0wt%  $\text{CeO}_2$ , ***0.8-2.0wt%***  $\text{TiO}_2$ , a ***weight ratio of  $\text{CeO}_2/\text{TiO}_2$  of 0.7-1.3***, or a ***550nm wavelength transmittance ( $T_{550}$ ) of 70% or greater*** at 5mm thickness. A wavelength of 550nm is within the wavelength range of ***visible light***.

Furthermore, the low transmittance glass of Seto '188 does not render obvious the presently claimed ultraviolet and infrared absorptive greenish glass, as Seto '188 does not provide to the skilled artisan any direction or suggestion to modify the low transmittance glass, or knowledge of how to modify the low transmittance glass, to achieve the presently claimed ultraviolet and infrared absorptive greenish glass comprising, *inter alia*, 0.8-2.0wt%  $\text{CeO}_2$  and 0.8-

2.0wt%  $\text{TiO}_2$ , a weight ratio of  $\text{CeO}_2/\text{TiO}_2$  of 0.7-1.3, and a 550nm wavelength transmittance ( $T_{550}$ ) of 70% or greater at 5mm thickness.

Similar to the low transmittance glass, Seto '188 discloses neither  $\text{TiO}_2$  and  $\text{CeO}_2$  as essential components in the ultraviolet/infrared absorbent green glass nor a weight ratio of  $\text{CeO}_2/\text{TiO}_2$  in the ultraviolet/infrared absorbent green glass. (See Pages 5-6, Paragraphs [0062]-[0067] and [0075]-[0076]). Moreover, while in some of Examples 11-22 and Comparative Examples 3 and 4 of Seto '188 the ultraviolet/infrared absorbent green glass comprises  $\text{CeO}_2$  in the presently claimed range of 0.8-2.0wt%, the ultraviolet/infrared absorbent green glass comprises  $\text{TiO}_2$  in an amount far less than the presently claimed range of 0.8-2.0wt%. Thus, the values of the weight ratio of  $\text{CeO}_2/\text{TiO}_2$  in Examples 11-22 and Comparative Examples 3 and 4 of Seto '188 are far greater than the presently claimed range of 0.7-1.3. In fact, in Examples 11-22 and Comparative Examples 3 and 4 of Seto '188, the values of  $\text{CeO}_2/\text{TiO}_2$  range from 5.0 to 18.3 (Example 18 ( $1.44/0.29 = 5.0$ ) and Example 13 ( $1.65/0.09 = 18.3$ ), respectively).

The ultraviolet/infrared absorbent green glass of Seto '188 does not anticipate the presently claimed ultraviolet and infrared absorptive greenish glass as each and every element set forth in the claim is *not* found in the ultraviolet/infrared absorbent green glass of Seto '188. In particular, the ultraviolet/infrared absorbent green glass of Seto '188 does not comprise, *inter alia*, **0.8-2.0wt%  $\text{CeO}_2$  and 0.8-2.0wt%  $\text{TiO}_2$  or a weight ratio of  $\text{CeO}_2/\text{TiO}_2$  of 0.7-1.3.**

Furthermore, the ultraviolet/infrared absorbent green glass of Seto '188 does not render obvious the presently claimed ultraviolet and infrared absorptive greenish glass, as Seto '188 does not provide to the skilled artisan any direction or suggestion to modify the ultraviolet/infrared absorbent green glass of Seto '188, or knowledge of how to modify the ultraviolet/infrared absorbent green glass of Seto '188, to achieve the presently claimed ultraviolet and infrared absorptive greenish glass comprising, *inter alia*, 0.8-2.0wt%  $\text{CeO}_2$  and 0.8-2.0wt%  $\text{TiO}_2$  and a weight ratio of  $\text{CeO}_2/\text{TiO}_2$  of 0.7-1.3.

In addition, as explained in the present application, the dominant wavelength by  $D_{65}$  light source of the presently claimed ultraviolet and infrared absorptive greenish glass is useful for setting the color of the glass. If the dominant wavelength by  $D_{65}$  light source is too short, the color becomes a so-called bluish color, while if the dominant wavelength by  $D_{65}$  light source is too long, a yellow or amber color increases. In an embodiment, the dominant wavelength by  $D_{65}$  light source of the presently claimed ultraviolet and infrared absorptive greenish glass is 520-540 nm. (Pages 12-13, Paragraph [0050]). The actual dominant wavelength of Examples 1-1 to 1-5 and 2-1 to 2-5 of the present application range from 525 to 550nm (Example 2-1 and Examples 1-3, 1-5, 2-4, and 2-5, respectively).

Accordingly, present claims 11 and 13 each recites that the ultraviolet and infrared absorptive greenish glass has dominant wavelength by  $D_{65}$  light source of **520-540nm**, and present claims 12 and 14 each recites that the ultraviolet and

infrared absorptive greenish glass has dominant wavelength by D<sub>65</sub> light source of **525-550nm**. While Seto '188 discloses that the ultraviolet/infrared absorbent green glass preferably has a dominant wavelength of 490 to 560nm (pages 6 and 8, paragraphs [0068] and [0088]), the actual dominant wavelength of Examples 11-22 and Comparative Examples 3 and 4 of Seto '188 range **from 497 to 515 nm** (Example 15 and Example 20, respectively). In contrast, the dominant wavelength recited in present claims 11-14 is much higher (*i.e.*, 520-540nm or 525-550nm). The marked difference between the significantly higher dominant wavelength ranges recited in present claims 11-14 as compared to the dominant wavelengths of Examples 11-22 and Comparative Examples 3 and 4 of Seto '188 results from the presently claimed amounts of 0.8-2.0wt% CeO<sub>2</sub> and 0.8-2.0wt% TiO<sub>2</sub> and weight ratio of CeO<sub>2</sub>/TiO<sub>2</sub> of 0.7-1.3, which are not disclosed or suggested by the ultraviolet/infrared absorbent green glass of Seto '188. With regard to measurement of the dominant wavelength, Applicants point out that the D<sub>65</sub> light source used in the present application (see pages 12-13, paragraph [0050]) is a modified version of CIE illuminant C used in Seto '188 (see page 6, paragraph [0083]). Therefore, the values of dominant wavelength measured using the D<sub>65</sub> light source and CIE illuminant C are comparable with respect to the visible light region.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-14 under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) over Seto '188 is respectfully requested.

- II -

The rejection of claims 1-14 under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) over U.S. Patent No. 6,624,102 ("Seto '102") is respectfully traversed.

Seto '102 discloses an ultraviolet and infrared radiation absorbing green glass. (Abstract).

Seto '102 discloses neither  $\text{TiO}_2$  and  $\text{CeO}_2$  as essential components in the ultraviolet and infrared radiation absorbing green glass nor a weight ratio of  $\text{CeO}_2/\text{TiO}_2$  in the ultraviolet and infrared radiation absorbing green glass. (See Abstract; Column 3, Lines 1-10; and Column 4, Lines 40-57). Moreover, while in some of Examples 1-15 and Comparative Examples 1-4 of Seto '102 the ultraviolet and infrared radiation absorbing green glass comprises  $\text{CeO}_2$  in the presently claimed range of 0.8-2.0wt% (*e.g.*, 1.70wt% in Example 1, 1.00wt% in Example 7, and 1.25wt% in Comparative Example 4), the amount of  $\text{TiO}_2$  in these Examples (*i.e.*, 0.10wt% in Example 1, 0.05wt% in Example 7, and 0.45wt% in Comparative Example 4) is less than the presently claimed range of 0.8-2.0wt%. Further, the values of  $\text{CeO}_2/\text{TiO}_2$  of Examples 1 and 7 and Comparative Example 4 can be determined as 17.0 (1.70/0.10), 20.0 (1.00/0.05), and 2.78 (1.25/0.45), respectively, which are greater than the presently claimed range of 0.7-1.3.

The ultraviolet and infrared radiation absorbing green glass of Seto '102 does not anticipate the presently claimed ultraviolet and infrared absorptive

greenish glass as each and every element set forth in the claim is *not* found in the ultraviolet and infrared radiation absorbing green glass of Seto '102. In particular, the ultraviolet and infrared radiation absorbing green glass of Seto '102 does not comprise, *inter alia*, **0.8-2.0wt% CeO<sub>2</sub> and 0.8-2.0wt% TiO<sub>2</sub>** or a **weight ratio of CeO<sub>2</sub>/TiO<sub>2</sub> of 0.7-1.3**.

Furthermore, the ultraviolet and infrared radiation absorbing green glass of Seto '102 does not render obvious the presently claimed ultraviolet and infrared absorptive greenish glass, as Seto '102 does not provide to the skilled artisan any direction or suggestion to modify the ultraviolet and infrared radiation absorbing green glass of Seto '102, or knowledge of how to modify the ultraviolet and infrared radiation absorbing green glass of Seto '102, to achieve the presently claimed ultraviolet and infrared absorptive greenish glass comprising, *inter alia*, 0.8-2.0wt% CeO<sub>2</sub> and 0.8-2.0wt% TiO<sub>2</sub> and a weight ratio of CeO<sub>2</sub>/TiO<sub>2</sub> of 0.7-1.3.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-14 under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) over Seto '102 is respectfully requested.

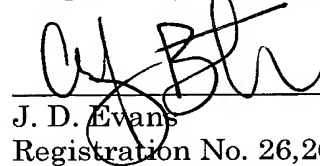
In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt, favorable action thereon is earnestly solicited.

If there are any questions regarding this Reply or the application in general, a telephone call to the undersigned at (202) 624-2845 would be appreciated since this should expedite the examination of the application.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #038788.57645US).

April 3, 2009

Respectfully submitted,



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